

description nor Wood's figure answers to my insect, I will add the characters of this species, which was unknown until I took three flying near the ground by a hedge at Niton, in the Isle of Wight, the 30th of July 1828.

It expands 1 inch and is yellowish-white: the superior wings are more or less freckled, deeply cleft, the upper lobe narrow and curved, the costa and inferior margins are tawny, forming an oblique line towards the extremity composed of two trigonate spots, that on the costa being the larger: inferior wings yellow-fuscous, divided into three rays, without any lobe on the abdominal one: legs white; thighs and hinder tibiæ tawny, the latter tipped fuscous; anterior tibiæ clavate and brown, except at the base, intermediate clubbed or tasseled with brown scales at the apex, and another similar tassel at the middle.

P. similidactylus varies in colour greatly, for one of my specimens is of an uniform dove-colour, except the darker markings on the upper wings, and the white but spotted legs. It is distinguished from the allied species by the narrow upper lobe of the superior wings and the tasseled spotted tibiæ.

18, Belitha Villas, Barnsbury Park, 1st Jan. 1850.

XIV.—*On Deposits of Diatomaceous Earth, found on the shores of Lough Mourne, County Antrim, with a record of species living in the waters of the Lake.* By the Rev. W. SMITH, F.L.S.

DURING a late visit to the North of Ireland I had placed in my hands, by Mr. J. M'Adam of Belfast, a small quantity of earth which from its peculiar appearance he fancied might contain the shells of "Infusoria." A very slight examination convinced me of the correctness of this conjecture, and proved that the entire substance of the earth in question consisted of a mass of unbroken or fragmental siliceous shells of various *Diatomacea*. Being desirous of ascertaining the exact nature of the deposit from which the earth had been procured, and how far it had claims to the character of "fossil," a term which has frequently, but I fear without sufficient consideration, been given to similar collections of these beautiful exuviæ, and understanding from Mr. M'Adam that the determination of the point would be of some importance as regarded a paper on the Geology of the district which he hoped in a short time to prepare for the 'Annals,' I determined to visit the spot, and record the particulars required from personal observation.

Lough Mourne is a sheet of fresh water of about two miles in circumference, lying amidst a range of low hills to the north-east of the town of Carrickfergus, at the distance of four miles from

that town, and about fifteen from Belfast. It occupies a basin in a plateau which does not appear to have any land of a much greater elevation in the immediate neighbourhood; the lake is therefore fed by the surface-drainage of a very small district, and has no further apparent sources of supply, with the exception of a spring at the north-west corner, the produce of which is of little importance. It is however worthy of note, that a small stream, sufficient to turn the wheel of a corn-mill in the neighbourhood, approaches within a few hundred yards of the lake, and falling into a natural pit or cavity, is lost to view, and is said to reappear at some distance southwards, and there unite its waters with those of the streamlet flowing from the lake, to whose larger mass it had thus fastidiously refused to contribute its supply. However this may be, it is certain that the lake itself is not subject to any serious disturbance from the sudden increase of its waters by floods or otherwise, and that its quiet depths and great purity are peculiarly favourable to the development of *Diatomaceæ*. The level of the water however appears to have been lowered to the extent of several feet by deepening the outlet from the lake, a course which seems to have been adopted in the hope of increasing the supply to a mill now in ruins, a fate not unnaturally the result of so reckless an expenditure of the capital represented by the waters of the natural reservoir, thus improvidently drained of its contents. The facts I have mentioned will account for the circumstances to which I proceed more particularly to refer, and which I noted during a brief survey of the shores of the lake in company with Mr. Geo. C. Hyndman and Mr. J. G. Smith on the 6th Sept. 1849.

On the north-east shore of the lake, at the height of about four or five feet from the present level of its waters, there occurred a stratum of diatomaceous earth corresponding with that alluded to in the opening of this paper. This layer was about six inches in depth and of great purity, containing but little foreign matter, and that chiefly the decayed filaments of the water-plants to which the living *Diatomaceæ* had been attached, or in company with which they had floated to their present position. This deposit when moist was of a dull gray colour, and resembled soft, freshly made soap; when placed upon the tongue, the taste was that of a smooth oleaginous substance. The sensation thus perceived is no doubt to be attributed to the extreme minuteness of the shells and their usually rounded outline, presenting no angles to grate upon the papillæ of the tongue or finger. When dried in mass, the earth is of a delicate cream-colour, when pulverized of a pure white, and forms, as I have proved, an excellent material for polishing silver plate. This layer must have required a long series of years for its gradual accumulation: its elevation from

the surface of the lake is accounted for by the lowering of the level of the waters before mentioned; and its position on the north-east shore is no doubt to be ascribed to the circumstance that south-west winds prevail at the season when the filaments to which the *Diatomaceæ* are attached, are loosened by the cold of autumn and winter.

At the present level of the water in the lake, near the spot where the layer now mentioned is found, there does not appear to be any fresh deposit of a similar character. This may possibly be owing to the more abrupt shelving of the bank, not affording a resting-place for the floating weeds; but on advancing towards the south and on the level strand of a little bay, there formed by a bend in the outline of the shore, a second deposit occurred evidently of a more recent formation. It was found covering the mud in a very thin stratum, and much more intermixed with earthy and other matters than the layer on the north-west shore. This layer is probably the result of accumulations made since the deepening of the outlet from the lake, and the date of this operation, and the comparative thickness of the layer itself, might possibly afford materials by which an estimate might be formed of the period occupied in the accumulation of the older deposit. The hurried nature of my visit did not permit me to make the inquiries necessary for such an investigation. No further deposits were found, nor were there any appearances of such on the western shore of the lake.

As important in determining the character of the deposits found, I made a gathering of such living *Diatomaceæ* as were within my reach, and I now subjoin a list of the species, discovered on a careful examination of all the collected materials, adhering throughout to the nomenclature of Kützing in his 'Bacillarien oder Diatomeen.' As a curious illustration of a "multum in parvo," I may mention that a drop which adheres to the point of a knife, dipped into water, holding the earth of the earlier deposit in suspension, will be found to contain nearly all the species mentioned below, and of some of these hundreds of individuals.

I have marked (†) those species which were found living in the lake; with one or two exceptions all the others were common to either deposit. In the older, or that from the north-east shore, the most conspicuous species and occurring in great abundance was *Surirella splendida*. The *Epithemia* were also exceedingly numerous. In the more recent deposit, *Surirella splendida* was in very small quantity, but its place was in some degree supplied by the beautiful *Melosira arenaria*, which I could not detect in the former. The *Epithemia*, which I have dedicated to one of my companions in a most agreeable excursion (whose reputation

as an acute observer in another department of natural history is not unknown to the readers of the 'Annals'), is a large and handsome species intermediate between *E. zebra* and *E. granulata*, but distinguished from both by its stouter habit, the regular convexity of its dorsal outline, and its rounded ends. I add a description in a note*.

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| † <i>Epithemia Musculus</i> . | † <i>Cocconema Cistula</i> . |
| † — <i>zebra</i> . | † <i>Gomphonema acuminatum</i> . |
| † — <i>ocellata</i> . | † — <i>constrictum</i> . |
| † — <i>gibba</i> . | — <i>geminatum</i> . |
| † — <i>turgida</i> . | † <i>Navicula nobilis</i> . |
| — <i>granulata</i> . | † — <i>major</i> . |
| — <i>Hyndmanii</i> . | † — <i>viridis</i> . |
| † <i>Himantidium pectinale</i> . | † — <i>sphærophora</i> . |
| <i>Fragilaria virescens</i> . | † — <i>radiosa</i> . |
| — <i>capucina</i> . | — <i>nodosa</i> β. <i>striata</i> . |
| † <i>Cyclotella operculata</i> . | — <i>binodis</i> . |
| — <i>minutula</i> . | — <i>lata</i> . |
| † <i>Melosira orichalcea</i> . | — <i>dicephala</i> . |
| † — <i>arenaria</i> . | — <i>mesolepta</i> . |
| <i>Campylodiscus noricus</i> . | † — <i>elliptica</i> . |
| <i>Surirella splendida</i> . | — <i>firma</i> . |
| † — <i>bifrons</i> . | † — <i>attenuata</i> . |
| † — <i>Solea</i> . | † <i>Stauroneis Phœnicentron</i> . |
| † — <i>elliptica</i> . | — <i>punctata</i> . |
| † <i>Synedra capitata</i> . | — <i>lanceolata</i> . |
| † — <i>biceps</i> β. <i>recta</i> . | — <i>cardinalis</i> . |
| † — <i>ulna</i> . | † — <i>lineolata</i> . |
| — <i>sigmoidea</i> . | — <i>amphicephala</i> . |
| † <i>Cocconeis Pediculus</i> . | — <i>Platystoma</i> . |
| † <i>Cymbella Ehrenbergii</i> . | † <i>Amphora ovalis</i> . |
| — <i>cuspidata</i> . | <i>Tabellaria fenestrata</i> . |
| † <i>Cocconema lanceolata</i> . | — <i>ventricosa</i> . |
| † — <i>cymbiformis</i> . | |

It is evident from the above that neither of the deposits found can with strictness be termed fossil; that they are simply the siliceous coverings of species, the greater number, if not all, of which, still inhabit the waters of the lake, having required no doubt a lengthened period for their accumulation, but still one comparatively recent, and which cannot be regarded as conferring a fossiliferous character on the deposit itself.

In the 'Magazine of Nat. Hist.' for July 1839, an interesting description of an "Infusorial" earth found on draining Lough Island-Reavey, co. Down—is given by Dr. Drummond of Belfast: I have been enabled by the kindness of W. Thompson, Esq. of that town to compare this deposit with those I have here noticed. Although occurring under very similar circumstances,

* *Epithemia Hyndmanii*, W. Sm. *E. major*, a latere secundario valde et æqualiter convexa, apicibus obtusissimis rotundatis non recurvatis, striis transversalibus moniliformibus vix convergentibus: a latere primario oblonga medio valde dilatata. Long. $\frac{3}{8}$ — $\frac{1}{2}$ uncia.

and in a locality not very distant from mine, the earth from Lough Island-Reavey is almost wholly different, including but few species, and the more numerous of these found but sparingly in the Lough Mourne deposits.

The following make up nearly the entire mass of the earth described by Dr. Drummond:—

Navicula gracilis.	Tabellaria fenestrata.
Himantidium arcus.	— ventricosa.
— pectinale.	

A few frustules of the following also occur:—

Surirella splendida.	Epithemia zebra.
Navicula viridis.	Cocconema lanceolata.

The profusion in which *N. gracilis*, *H. pectinale* and *T. fenestrata* occur in this deposit, would lead to the conclusion that the waters of the lake in which it had been found were the drainage of a subalpine district, whose surface was almost exclusively peat, while the Lough Mourne deposit would, even to the philomicros unacquainted with its locality, indicate the neighbourhood of clear springs, grassy pastures and a low elevation. In this way these minute organisms may afford matter for interesting speculation, and when occurring in a fossil state may possibly be made available in the researches of the geological inquirer.

Wareham, January 10, 1850.

XV.—Notes on Chalcidites, and Descriptions of various new species. By FRANCIS WALKER, F.L.S.

[Continued from vol. iii. p. 210.]

CAUDONIA, n. g.

Fem. Head and chest convex, very finely shagreened: head thick, a little broader than the chest: feelers slender, subclavate; first joint long, slender; second cup-shaped; third and fourth very small; the following from the fifth to the tenth successively but slightly decreasing in length and increasing in breadth; club long-elliptical, broader than the tenth joint, and more than twice its length: chest spindle-shaped, much developed: fore-chest rather long, having a slight transverse ridge near the hind-border whence it declines and grows narrower and forms a short neck: shield of the mid-chest very long; sutures of the parapsides distinct for rather more than two-thirds of the length of the chest, but thence quite obsolete; axillæ parted by rather less than one-fifth of the breadth of the chest; scutcheon nearly conical, with a slight transverse suture towards the hind-border; hind-scutcheon transverse, but rather large: hind-chest well developed, obconical, declining, with a ridge along the middle and a suture on each side: petiole short: abdomen long-oval, smooth, shining, slightly concave above, rather deeply keeled beneath, somewhat broader and a little shorter than the chest; metapodeon occu-